

ï»¿Greetings.

My name is Randall Fitzgerald and I am filing this comment in response to the NINTH BROADBAND PROGRESS NOTICE OF INQUIRY, GN Focket No. 12-228.

Firstly, a brief bit of background. My background is in web systems engineering, directing engineering teams, and IT/Engineering department oversight, direction, and planning. I have acted in this capacity for seven years professionally and for around fifteen years in a personal and casual context through open-source projects and pro-bono consulting.

Now, on to the points I would like to address. Specifically, I plan to address my thoughts and experiences on latency, capacity, mobile broadband and roll out.

Latency is the one area that I feel America's broadband infrastructure tends to shine, at least internally. Speeds are solid from the coas-to-coast on most broadband providers with little in the way of issues brought on my slow hops or inefficient routing. There are a few obstacles that stand in the way of this. One of those is insufficient UDP packet handling infrastructure in a world that is growing to use UDP more and more for various services. Likewise, deep packet inspection (aside from being a very serious privacy concern) can lead to hold-ups and undue strain on routing systems. They are inefficient and are primarily used as a means to hinder net neutrality (again, another important issue) and/or retrieve information about customers that they may have understood to be private.

As we look to our connections outside of the US, latency to European countries is generally quite good except where there will be obvious deficiencies (low-tech/income nations) and is generally acceptable or near-light in speed given routing methodologies. Asia, sadly, is a different prospect altogether. While I regularly have ~130ms ping times to European nations and Australia from the West Coast of the US, even heavily developed countries such as Singapore, Japan, and Korea offer up pings well in excess of 350ms. This, I feel, is an unacceptable state of affairs and it certainly dissuades the sort of interconnection that the internet is so very rich in. Especially for the growing data-intensive state of the web.

Moving on to Capacity. This is a much more serious problem, I fear. While the bulk of providers make little in the way of complaint regarding bandwidth caps, there are clear and present threats to this being the state of things and with little reason. TCP/IP is an egalitarian system, so unless packets are being interfered with or certain packets being prioritized there is no way for a user to take more than his "fair share" of bandwidth. Even with this being the case, ISPs have made move toward justifying the practice as arguing that their infrastructure cannot handle the bandwidth. How has this become a justification for limiting the allotment of data? Is it not the job of a company to build infrastructure to handle the customer base? If a sandwich maker wants to have everyone eat his sandwiches, is he

not responsible for providing the raw ingredients to do so? We would not accept him selling half a sandwich for the same price, it should not be so with bandwidth restrictions. Proof positive that this practice is both unnecessary and profit-driven appears by way of Time Warner. They had planned a tiered internet pricing structure, claiming they just couldn't keep going without it. The users rebelled and promised to find other providers. Enough people made good on the threat that Time Warner backed out of the plan, and yet they remain. It's a farce that is being played out in the interest of convincing people of a lie to justify charging overages that cost customers unnecessary millions a year.

On to mobile, since it is the most atrocious of the lot. Why is it that Sprint is able to run a profitable business without bandwidth caps or overages when they have far fewer customers than any of their competitors? Or is it, as we are asked to believe, the customers own fault? Sprint has been dedicated to legitimately expanding their footprint and offering newer technologies and that is why, with a far lower budget, they have a similar true 4G footprint to other carriers. Still we are asked to believe that these rollouts are not only insanely expensive but that, even though they know the size of their customer base, they are being rolled out in ways that do not sufficiently account for what would be the existing user traffic. As such, bandwidth caps remain. These caps are stifling the expansion of what promises to be one of the most important tech sectors of the next ten years and it is becoming a serious problem since the frequencies are giving over as a monopoly to the highest bidder. AT&T and Verizon stand as a duopoly that determine what our mobile broadband future look like and if they are not carefully overseen they hold the keys to when they door will be opened, and without their blessing it may well be five years before we can tap that market properly. Billions of dollars waiting for the telcos to stop under-expanding to keep the profit lines done. It's bad for business on the software and platform sides in ways that I cannot even begin to measure. That two companies hold such sway over the future of mobile internet services is cause for serious concern and I can only hope that something is done to ensure that the customer is not the one to pay the price of profit motive at the expense of innovation. Our reliance on mobile data grows every day and oversight is necessary to make sure that these telcos are no longer allowed to be the gatekeepers of wireless digital freedom.

I believe that I have touched upon the idea of expansion in general, but I would like to say a few final words about the sad state of terrestrial and mobile broadband. Firstly, America's primary goal in net expansion should not be so ridiculous as to look for 4/1 broadband. We have 82% coverage and it's time to set some real goals. 100mbps as a real goal would bring us in line with the bulk of Europe and Asia for personal broadband speeds. These are available, at relatively high expense, to people lucky enough to live in one of an insanely limited areas where Google, FiOS, Sonic, and a handful of others have rolled fibre options. Comcast has their options but they are cost prohibitive and the expansion of these speeds is in many ways the sole bottleneck holding back hundreds of innovation in the connected space. The mobile side is especially dim with rollouts of what has already become old tech taking 5 years to reach decent coverage sizes. It puts us well behind the curve and the infrastructure

in place is inadequate on its best day. We must continue to drive expansion of SERIOUS broadband services. Fibre options and speeds at and in excess of 100mbps so that America can put itself on parity with the larger companies. People had no problem rolling cable out in the 1970s and well after, that should be the attitude on fibre. It should be of the utmost importance that we bring REAL future-ready tech to every community in the US so that we can be ready to continue on as leaders in the connected space. Our infrastructure and the companies in charge of them seem to have little interest in that side, but the fact of the matter is that they provide a service not a product. It is their job to ensure that that service is capable of serving the people. We have entered an age where broadband is becoming a necessity for human life and interaction and companies need to be made to respect this or have their monopolies stripped from them and given to someone who does.

I admit that it the last bit may seem a bit radical, but I firmly believe that our net infrastructure is tightly connected to our relevance to the coming century and if we are left behind in this space it is going to be very hard to catch up. Likewise, it will limit the ability for great innovation to major cities with the proper infrastructure to support such things and leave the rest of the country behind.

Thanks for your time.

Randall Fitzgerald